REMARKS

Claims 1-52 were presented for examination all claims were rejected.

Claim 47 has been amended to correct an inadvertent error made in a previous amendment of the claim. As Examiner has quite correctly pointed out in rejecting claim 47 under 35 USC §112, the claim as it presently reads is gibberish. Amendment is made simply to make claim 47 read correctly and place the claim in better form for consideration for appeal. No new issues are raised by the proposed amendment and thus, Applicant respectfully requests entry of amended claim 47.

Rejection under 35 USC 112

Claims 47 and 48 are rejected under 35 USC 112, second paragraph as being indefinite because of the wording of the multiple dependency claimed in claim 47. Claim 47 has been amended to correct errors made in a previous amendment. With the amendment to claim 47, Applicant urges that the rejection has been cured and requests reconsideration and withdrawal of the rejection of claim 47.

Claim 48 was rejected as being dependent upon a rejected claim (claim 47). With the amendment to claim 47, the rejection of claim 48 has been cured and requests reconsideration and withdrawal of the rejection of claim 48.

Rejection under 35 USC 102

Claims 1, 3, 7, 12-15, 18, 24-26, 29, 35-39, 42, 47, 48, 51 and 52 are rejected under 35 USC 102(e) as being anticipated by Bardash (6,278,117). Applicant traverses the rejection.

Claim 1 clearly recites a solid organic semiconducting material that consists essentially of a π-conjugated material having an electrical resistivity of at least 10^9 ohm-cm. Rejection is based upon Examiner's assertion that Bardash discloses the invention claimed in base claim 1.

Bardash discloses and claims a solid state photoconducting device for detecting ionizing radiation comprising an active polymer layer (FIG. 1, 7) cast onto a polymeric substrate (FIG. 1, 9), wherein the active polymer layer and polymeric substrate are disposed between an electrode configuration (col. 3, 43-63 and claim 1). Nowhere does Bardash disclose the claimed π-conjugated material having a specific resistivity of at least 10^9 ohm-cm, and Examiner admits as much. However, Examiner attempts to overcome this deficiency by a series of calculations that purport to show that the material used by Bardash, in fact, possesses the claimed resistivity and thus, asserts that Bardash inherently teaches a high resistivity film. Applicant traverses on two counts. First, Examiner's calculations are based upon the unsupported assumption that the film, which Examiner does not define, has a resistivity of 1 giga ohm-cm. Even if we were to assume that Examiner's initial assumption was correct, which Applicant does not, what does the 1 giga ohm-cm resistivity refer to? Does it refer to the polymer substrate combination from which Bardash builds his device (col. 3, 43-63 and claim 1) or to the active polymer layer itself? (In this regard, Applicant notes that any resistance measurements derived from FIG. 4 of Bardash include the resistance of the polymer substrate (polyimide) and that of the active layer deposited thereon (col. 4, 10-40)). Secondly, as Applicant has discussed in an earlier Response, all Bardash requires is that the organic material have a density very close to that of normal tissue (col. 2, 37-40) and have a chemical composition similar to tissue carbohydrates, consisting essentially of carbon, hydrogen and oxygen (col. 4, 10-20). He neither suggests nor teaches that his polymer material possesses any specific resistivity or that a high resistivity material is required. Consequently, the mere possibility that one of ordinary skill in the art would recognize that Bardash disclosed the use of a high resistivity polymeric material for

radiation detection is, by itself, insufficient to render claim 1 inherently anticipated. *Prima facie* anticipation requires that there be no difference between the claimed invention and the disclosure of the reference as viewed by a person of ordinary skill in the field of the invention and that each claimed element be disclosed clearly enough to prove its existence in the prior art. On this basis alone, Bardash clearly fails to anticipate the claimed invention. Based on the argument above, Applicant requests reconsideration and withdrawal of the rejection of claim 1.

Since, as Applicant has shown above, claim 1 is allowable over Bardash claims 3, 7, 12-15, 18, 24-26, 29, 35-39, 42, 47, 48, 51 and 52 are also allowable and Applicant requests reconsideration and allowance.

Applicant notes that in rejecting claims 35 and 36-38 and 51 and 52 Examiner has made statements that are contrary to what is taught by the reference. Specifically, Examiner has stated that Bardash discloses the substance of claims 35 and 36 and 51 and 52 viz., an array of electrodes embedded in the material of claim 1, wherein the array comprises a first set of parallel wires intersecting orthogonally with a second set of parallel and references FIG. 3 of Bardash in support of that statement. Referring now to the figure in question, it is easily seen that the electrodes of Bardash are oriented interdigitally as explicitly stated by Bardash (col. 3, 43-63) not the claimed orthogonal arrangement.

Insofar as claims 47 and 48, Examiner ignores the explicit recitation of the claim that an external stress is applied by stretching the π-conjugated material to strain and orient the polymer chains (claim 47) to assert that the claimed process of stretching does not preclude applying a voltage to align molecules to create a crystalline character during casting (Bardash col. 5, 3-9). While application of a voltage may align molecules to create a crystalline character during casting, that is not what claim 47 recites and any process, whatever its effect, other than the

claimed process of stretching is immaterial to the language of claim 47 upon which rejection should be based.

Claims 1-3 and 7-9 are rejected under 35 USC §102(b) as being anticipated by Snavely (3,849,345). Applicant traverses the rejection.

In response to Applicant's argument overcoming the rejection of claims 1-3 and 7-9 over Snavely, Examiner presents a Table from Snavely that shows resistivity measurements of the Snavely material without the addition of carbon black. However, careful reading of Snavely shows that the polymer material taught by Snavely, with or without carbon black, consists of polymer, zinc oxide, stearic acid, sulfur and an accelerator (benzothlazyl sulfide) (col. 4, 1-20), a composition that bears absolutely no resemblance to that claimed. Clearly, rejection of the claims as being anticipated by Snavely is misapplied and Applicant requests reconsideration and withdrawal of the rejection of claims 1-3 and 7-9.

Rejection under 35 USC §103

Claims 2, 8, 9, 19, 20, 30 and 31 are rejected over Bardash (6,278,117) in view of Butler (4,641,037), Selph (4,445,036 and Snavely (3,849,345). Applicant traverses the rejection.

The rejected claims simply and explicitly recite that the claimed π-conjugated material comprises a mixture of π-conjugated materials (claim 2), that the π-conjugated polymers are mixed with organic polymers (claims 8, 19 and 30) and that the organic polymers include polystyrene or poly(methylmethacrylate) (claims 9, 20 and 31). By Examiner's admission, nowhere does Bardash teach, disclose or even suggest that his polymer material be mixed with anything including other π-conjugated material (claim 2) or organic polymers (claims 8, 9, 19, 20, 30 and 31). However, Examiner asserts that that deficiency is overcome by looking to the other cited references. But since Bardash neither discloses nor teaches mixing his polymer material with other π-conjugated

material or organic polymers there is no suggestion or motivation to look to other references except for that provided by the instant invention. Thus, combining Bardash with the other cited references as Examiner has done requires impermissibly using the invention as a blueprint.

It is well settled that hindsight reconstruction cannot be used to pick and chose among isolated disclosures in the prior art to deprecate the invention. *In re Fine*, 837 F.2d 1071, 1075, 5 USPQ2d 1780,1783 (Fed Cir. 1988). Combining prior art references without evidence of a suggestion, teaching, or motivation simply takes the inventor's disclosure as a blueprint for piecing together the prior art to defeat patentability-the essence of hindsight, *In re Dembiczak*, 175 F.3d 994, 999 50 USPQ 1614, 1617 (Fed. Cir. 1999), which Applicant urges is the case here. Moreover, "Broad conclusory statements regarding the teachings of multiple references, standing alone, are not evidence" (ibid. at 1617).

On the basis of the argument above, Applicant requests reconsideration and withdrawal of the rejection.

Claims 5, 6, 16, 17, 27 and 28 are rejected as above. Applicant traverses the rejection.

Claims 5, 16 and 27 recite, *inter alia*, that the π-conjugated polymer material of the invention is selected from any of polyacetylenes, polypyrroles, polyfluorines, and derivatives and combinations thereof.

In rejecting the above-referenced claims, Examiner states that Bardash discloses everything as above except for the claimed polypyrroles and/or polyacetylenes. Therefore, because the polythiophene, used by Bardash, and polypyrroles and polyacetylenes are art-recognized equivalents (insofar as their electrical properties), as evidenced by Selph ('036), it would be obvious to substitute one for the other. In the first place, this is a mischaracterization of Bardash. As Applicant has shown above, Bardash only states that his polymeric layer be fashioned from

polymeric material having a chemical composition similar to tissue carbohydrates. He is silent about electrical properties (e.g., resistivity). Except for searching for a polymer material having a chemical composition similar to tissue carbohydrates, there is neither suggestion nor teaching in Bardash that would lead or motivate a person of ordinary skill in the art to the cited references, which apparently are cited only because of their equivalent resistivity properties.

In responding to Applicant's earlier argument directed to the rejection of claims 5, 16 and 27, Examiner asserts that based on his calculations, discussed above, Bardash inherently teaches a high resistivity polymer material that would lead one of skill in the art to select the claimed materials from the prior art. In the first place, as Applicant has shown above, Examiner's calculations are based on an unsupported and perhaps incorrect assumption. Secondly, while inherency is sufficient for a rejection under 35 USC §102 it is inappropriate as a basis for rejection under 35 USC §103. Consequently, it is obvious that the combination of Bardash and the references cited above to reject claims 5, 16 and 27 requires the impermissible use of hindsight. Therefore, Applicant urges that a *prima facie* case of obviousness has not been made and requests reconsideration and withdrawal of the rejection. Moreover, Applicant notes that the above-referenced claims include polyfluorines as well as poly(1-methoxy-4-(2-ethylhexyloxy)-2,5-phenylenevinylene), poly(2,5-dioctyloxy-p-phenylenevinylene), poly(3,4-ethylene dioxythiophene), and poly(3-octylthiophene) materials not disclosed in any of the cited references.

Claims 10, 22, 33 and 41 are rejected as unpatentable over Bardash in view of Butler. Applicant traverses the rejection.

By Examiner's own admission there is no suggestion whatsoever in Bardash that a metal be incorporated into the π-conjugated polymer

structure as claimed. Consequently, except for using Applicant's invention as a blueprint there is neither suggestion nor motivation in Bardash to look to Butler. Since the combination Bardash with the other cited references must, of necessity, require impermissibly using the invention as a blueprint a *prima facie* case of obviousness has not been made and Applicant requests reconsideration and withdrawal of the rejection of claims 10, 22 and 33.

Claims 11, 23 and 34 are rejected as unpatentable over Bardash, in view of Butler and Smith (3,824,220). Applicant traverses the rejection.

Claims 11 (dependent from claim 10), 23 (dependent from claim 22) and 34 (dependent from claim 33) claim the incorporation of a metal into the π-conjugated material of the invention, wherein the metal is aluminum, gallium, boron or lithium. Bardash claims in the cited reference (claims 10, 22 and 33) a metallic binder layer deposited onto a polymeric substrate. The metallic binder layer is provided for electrical contact between the metallic electrode layer embedded in the polymeric substrate and a source of electrical potential, i.e., metal contacts (col. 2, 55-67). The rejected claims of the instant invention plainly recite that a metal is incorporated into the structure of the π-conjugated material of the invention and is provided to enhance the ability of the semiconducting polymer to detect specific radiation (p. 10, 17-25). The rejection is without foundation and Applicant requests reconsideration and withdrawal.

Claim 40 is rejected as unpatentable over Hodges (6,174,420) and Heffelfinger (3,048,564). Applicant traverses the rejection.

Hodges is directed to a thin-layer electrochemical cell and the manufacture thereof. Hodges cell consists of an electrically resistive sheet having an aperture therethrough, thin electrodes on either side of the electrically resistive sheet defining a cell therebetween, wherein the

electrodes are conductors or semiconductors (col. 2, 40-60). In a preferred embodiment, the aperture is of a circular cross-section (FIG. 15). Contrary to Examiner's express representation, nowhere does Hodges teach, show or disclose the embodiment of the invention recited in claim 40, namely a device for detecting ionizing radiation wherein the solid organic semiconducting material of the invention is disposed between said electrodes and the combination of electrodes and π-conjugated polymer is rolled up along their length to form a generally cylindrical-shape structure. In support of his rejection Examiner cites Fig. 15 of Hodges. In the referenced figure Hodges shows a plurality of flat planar electrode structures surrounding a central aperture cell. Nowhere does Hodges show or teach the claimed structure comprising electrodes, and a solid organic semiconducting material consisting essentially of a π-conjugated material having an electrical resistivity of at least 10^9 ohm-cm rolled up along its length to form a generally cylindrical-shape structure. The addition of Heffelfinger to Hodges does not save the rejection.

Whether or not the preamble of claim 40 has been given patentable weight or not is totally immaterial to the rejection and response. The issue is simply that Hodges does not teach the claimed structure. Based on the argument above, the rejection of claim 40 as unpatentable over Hodges is clearly misapplied and Applicant requests reconsideration and withdrawal of the rejection of claim 40.

Claim 50 is rejected as unpatentable over Bardash and Robinson (5,500,534). Applicant traverses the rejection.

Claim 50 teaches a device for detecting ionizing radiation in which the material of claim 1 is disposed between electrodes are composed of silicon wafers having prefabricated pulse detection circuitry patterned thereon.

Bardash, in a preferred embodiment cited by Examiner, shows in cross section through an array in FIG. 1 comprising; a metallic electrode layer 3 (a), contacting a metallic binder layer 5 (b) and an active polymeric layer 7 cast onto a polymeric substrate 9 (c) so that the metallic electrode layer is embedded in the active polymeric layer 7. A top view of the array is shown in FIG. 2, looking downwardly through the active polymeric layer. The metallic electrode layer 3 is shown in greater detail in FIG. 3 of Bardash and consists of at least two arrays of interdigitated conductor lines 15 and 17, each leading to one of two respective wire legs 19 and 21, such that there is a small capacitance between the pair of wires (col. 3, 40-45). Thus, Bardash's electrode consists of two arrays of interdigitated conductor lines contacting a metallic binder layer. Bardash neither teaches nor suggests the claimed prefabricated pulse detection circuitry. Furthermore, by Examiner's admission Bardash does not teach the use of silicon as a substrate for the pulse detection circuit. In attempting to overcome this discrepancy Examiner looks to Robinson ('534). However, since Bardash neither teaches nor suggests the need or desirability for other than the gold electrode material he uses (col. 10, 10-40) there is no suggestion or motivation in Bardash to look to Robinson for other electrode materials. It is obvious from the argument above that impermissible hindsight was used to combine references and reject claim 50. On this basis, Applicant requests reconsideration and withdrawal of the rejection of claim 50.

CONCLUSION

Applicant having overcome the rejections of claims 47 and 48 under 35 USC §112, second paragraph, the rejection of claims under 35 USC §102 and 35 USC §103 now requests withdrawal of the rejections and that a timely Notice of Allowance be issued in this case.

Respectfully submitted,

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Application No: 09/863,128 For Applicant: Doty